





CHEROKEE NATION

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January 10, 2007

Aunjanee Gautreaux, 6PD-Q Air Quality Analysis Section U. S. EPA, Region 6 1445 Ross Avenue Dallas, Texas 75202-2733

RE: CHEROKEE NATION COMMUNITY AIR TOXICS PROJECT SECOND QUARTER TECHNICAL REPORT

Dear Ms. Gautreaux:

Enclosed is the Second Quarter Technical Report (September, October, November, 2006) for the Cherokee Nation's Community Air Toxics Project (Cooperative Agreement number XA-96619701-0). The second quarter financial report and MBE/WBE will be provided by the Cherokee Nation Accounting Department and by our budget analyst, respectively.

If you have any questions regarding these matters, please call Ryan Callison at 918-453-5093 or Kent Curtis at 918-453-5095.

Sincerely,

Jeannine Hale

Administrator for Environmental Programs

Enclosure

cc: File

QUARTERLY TECHNICAL REPORT

for

CHEROKEE NATION ENVIRONMENTAL PROGRAMS (CNEP) COMMUNITY AIR TOXICS PROJECT (XA-96619701-0)

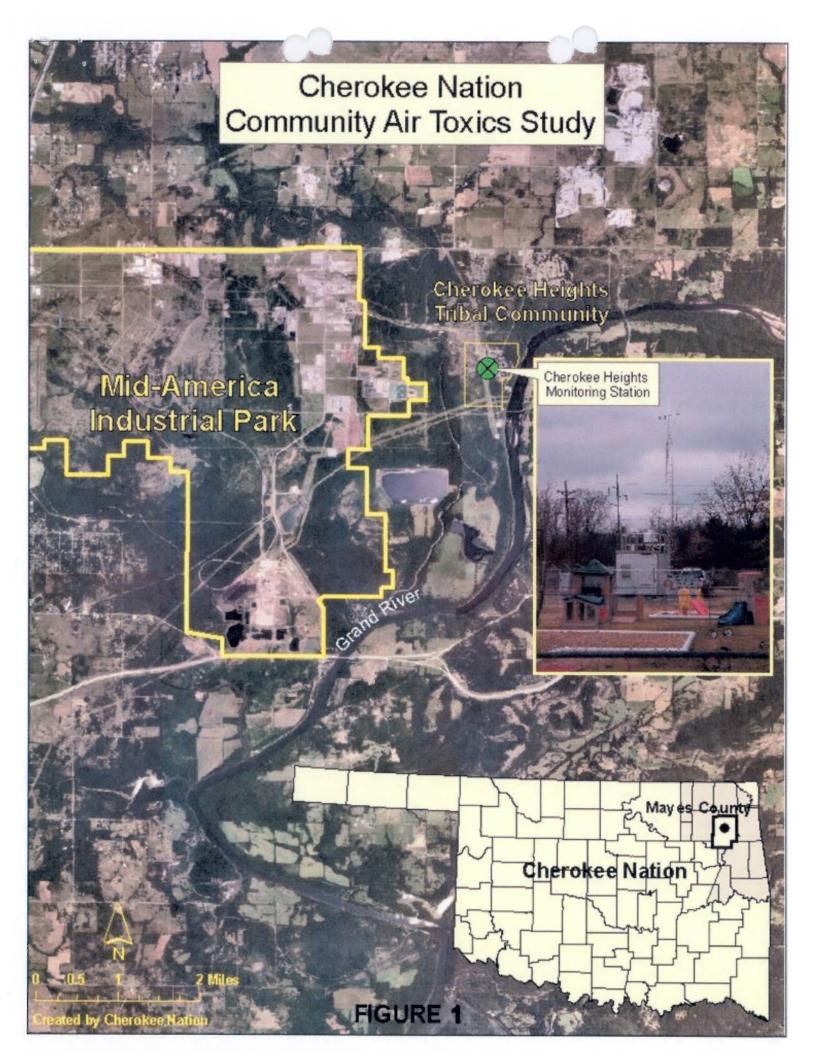
SECOND QUARTER FY2006 (SEPTEMBER, OCTOBER, NOVEMBER, 2006)

OVERVIEW OF PROJECT ORIGIN AND PURPOSE

The origin and purpose of this project are described in the first quarterly technical report for this project. In summary, the Cherokee Nation is currently conducting this 18-month VOC sampling project at its Cherokee Heights (aka, Pryor) site (Figure 1), collecting samples in vacuum canisters for analyses via EPA Test Method TO-15. Over 90 samples will be collected using a 1-in-6 day sampling interval. The 18-month project will document seasonal variations in VOC concentrations and will focus on hazardous air pollutants (VOC HAPs) identified as "drivers" in the 1999 NATA, as well as on VOC HAPs detected in the Cherokee Nation's screening project from the winter of 2005. Project data will be shared with the EPA, the state of Oklahoma (ODEQ), the Cherokee Nation, and the general public via AQS, XML flat file, and other means, as appropriate.

SECOND QUARTER GOALS, OBJECTIVES, AND ACCOMPLISHMENTS

- 1. Prepare Restek 6-liter vacuum canisters for initiation of sample collection. The CNEP sent its five Restek 6-liter vacuum canisters to ERG to be cleaned and prepared for sample collection in mid-September, 2006. In addition, the CNEP purchased two new Restek 6-liter vacuum canisters (\$440 each) in November and sent them to ERG to be cleaned and prepared for sample collection. Thus the CNEP is using seven Restek canisters in its sample rotation. Two older Graseby 6-liter canisters, which had been used for the screening project in 2005 and which had been used briefly during this current project, were retired from the sample rotation.
- 2. Initiate sample collection on September 26, 2006. Sample collection began as scheduled on September 26, 2006. Seventeen samples (plus two duplicates) were collected as of December 31, 2006. Summary information for these 19 samples is shown on the first page of the Proposed Sampling Schedule for this project, which is included as Appendix A of this quarterly technical report. All but two of the 19 samples were collected as scheduled. Samples originally scheduled to be collected on October 8th and October 14th were not collected on those dates because of errors in programming the automatic timer on the RM910A sampler. Make-up samples were thus collected on October 10th and October 18th, respectively. Two samples collected on December 1st and December 25th were invalid (unuseable) because the sample canisters had internal pressures of zero at the end of sample collection. A further explanation of problems



encountered with sample collection and analysis is included in the "Problems Encountered" section of this quarterly technical report.

- 3. Obtain a backup RM910A sampler and perform NATTS Certification and flow verification check on it. The CNEP purchased a refurbished RM910A sampler and a viton diaphragm kit (spare parts for standard RM910A pump) from RM Environmental, Inc. for a total of \$4850.72. The refurbished sampler and diaphragm kit were received by the CNEP on September 29, 2006. The refurbished sampler will serve as a backup sampler that can be put into service if the primary RM910A sampler fails or needs repairs. The CNEP will send its backup sampler to ERG for an EPA Compendium Method TO-15 "canister sampling system certification" (aka, NATTS Certification) in February, 2007. Subsequently, the CNEP will perform a flow verification check on the backup sampler. NATTS Certification of the backup sampler was postponed from October, 2006 to allow CNEP time to obtain materials (stainless steel tubing and connectors) for construction of dedicated sample inlets for the backup sampler. The dedicated inlets will be constructed by the CNEP in January, 2007 and will be sent to ERG with the backup sampler for NATTS Certification.
- 4. ERG will begin reporting sample data to the CNEP within 45 days after the completion of the first month of sample collection. The CNEP received lab data for its first seven samples collected from September 26th through October 26th from ERG in December, 2006. The CNEP analyzed this data in January, 2007. Summaries of the ERG lab data and of the CNEP data analysis are included in **Appendix B** of this quarterly technical report.
- 5. The CNEP will complete the revision of its QAPP/Work Plan for this project in September, 2006 and submit it to EPA for approval. This task was completed on September 21, 2006. The EPA (Donna Ascenzi and Aunjanee Gautreaux) approved the revised QAPP/Work Plan on October 26, 2006. Although ERG approval of the revised QAPP was not necessary, the CNEP sent a copy of the revised QAPP to ERG for their reference and concurrence. ERG concurred with the revised QAPP on October 31, 2006. A copy of the revised QAPP/Work Plan approval page is included in Appendix C of this quarterly technical report.
- 6. Kent Curtis of CNEP will attend the EPA Region 6 Quality Assurance Conference. Kent attended the EPA Region 6 Quality Assurance Conference in Dallas on October 18, 2006, giving a presentation on the CNEP's VOC screening project at Pryor in 2004-2005 and discussing the initiation of this current Community Air Toxics Project. Kent also attended the EPA's National Air Monitoring Conference in Las Vegas, Nevada on November 6-9, 2006, giving a poster presentation about the CNEP's VOC screening project of 2005, attending numerous technical sessions about air toxics monitoring, and conferring with numerous persons about technical aspects of air toxics monitoring.

7. Two or more CNEP air program personnel will attend the Air Toxics Training Workshop. Kent Curtis of CNEP attended the Air Toxics Training Workshop in Durham, North Carolina on December 12-14, 2006.

Summary of Second Quarter Goals, Objectives, and Accomplishments. The goals and objectives of this project, including overall goals, have not changed from the original CNEP application for funding. Second quarter goals and objectives for this project were to begin sample collection, analyze initial sample data, obtain a backup RM910A sampler, and send CNEP staff to technical conferences and trainings pertaining to air toxics monitoring. These goals and objectives have been met. No significant difficulties or delays were encountered in meeting these second quarter goals and objectives. In summary, work for this project is on schedule.

Project Timeline and Milestones. The following list shows the timeline and milestones for the entire two-year duration of this project. *Milestones that have been met are shown in italics.*

- (1) Cherokee Nation will receive EPA approval of its QAPP for this project by June 1, 2006, or by the end of the second month of the project. The original QAPP/Work Plan for this project was approved by the EPA in February, 2006. The CNEP revised this original QAPP in September, 2006, and the revised QAPP was approved by EPA on October 26, 2006.
 - (2) Cherokee Nation will solicit bids from labs for sample analysis during the first month of the project and will select the winning bid and award the contract by the beginning of the third month of the project. ERG was selected (August, 2006) to analyze project samples and perform data reporting for the project.
- (3) Cherokee Nation will begin sample collection by the beginning of the third month (September, 2006) of the project, or by the date of project QAPP approval by EPA, whichever is later. Sample collection for this project began on September 26, 2006. As of December 31, 2006, seventeen samples (plus two duplicate samples) had been collected for this project.
- (4) Cherokee Nation will begin data analysis as soon as the first data is received from lab. Data analysis will continue to the end of the project on May 31, 2008. The CNEP began receiving lab data from ERG in December, 2006. The CNEP analyzed ERG data for the first seven samples collected from September 26 through October 26, 2006 in January, 2007. Data analysis will be an ongoing activity until the end of this project in May, 2008.
- (5) Cherokee Nation will complete sample collection by the end of 18 months of sampling (March, 2008).
- (6) ERG will submit sample data to CNEP within 45 days after the end of each month of sample collection. ERG will submit statistical analyses of data and quality assurance

reports to CNEP at the end of each year of the project. *ERG began submitting sample data to the CNEP in December, 2006 (see Project Timeline and Milestone item 4 above).*

- (7) ERG, under the terms of its contract with CNEP, will post project data to AQS within 90 days of the end of each calendar quarter. Posting of project data to AQS will begin as early as the 9th month (March, 2007) of the project. ERG will complete final posting of project data to AQS within 90 days after the conclusion of the project on May 31, 2008.
- (8) Cherokee Nation will host public meeting to present results of project to residents of Cherokee Heights no later than the final month of the project (May, 2008).
 - (9) Cherokee Nation will submit final project report to EPA within 90 days after the conclusion of the project on May 31, 2008. Quarterly technical reports will be submitted to EPA within 30 days after the end of each three-month quarter of each fiscal year.

CHANGES IN KEY PERSONNEL INVOLVED IN PROJECT

The following six persons in the CNEP air quality monitoring program are working on this project:

Ryan Callison, Project Manager Kent Curtis, Project QA/QC Manager April Hathcoat, Environmental Specialist II Jacque Adam, Environmental Specialist I Jeremy Freise, Environmental Specialist I Danielle Keese, Environmental Technician

Ryan has overall responsibility for the project. Kent is responsible for project planning, project oversight, and QA/QC management. Kent and April are responsible for project data management. April, Jacque, Jeremy, and Danielle have primary responsibility for sample collection and equipment maintenance, while Kent and Ryan may also assist with such tasks. Amber McCurtain left the CNEP in December, 2006.

ERG is the laboratory responsible for sample analyses and data reporting for the project. Key contacts at ERG are Julie Swift (project oversight), Ray Merrill (QA oversight), Dave Dayton (Method TO-15 canister sampling system certification), and Rodney Williams (canister sample shipping and receiving).

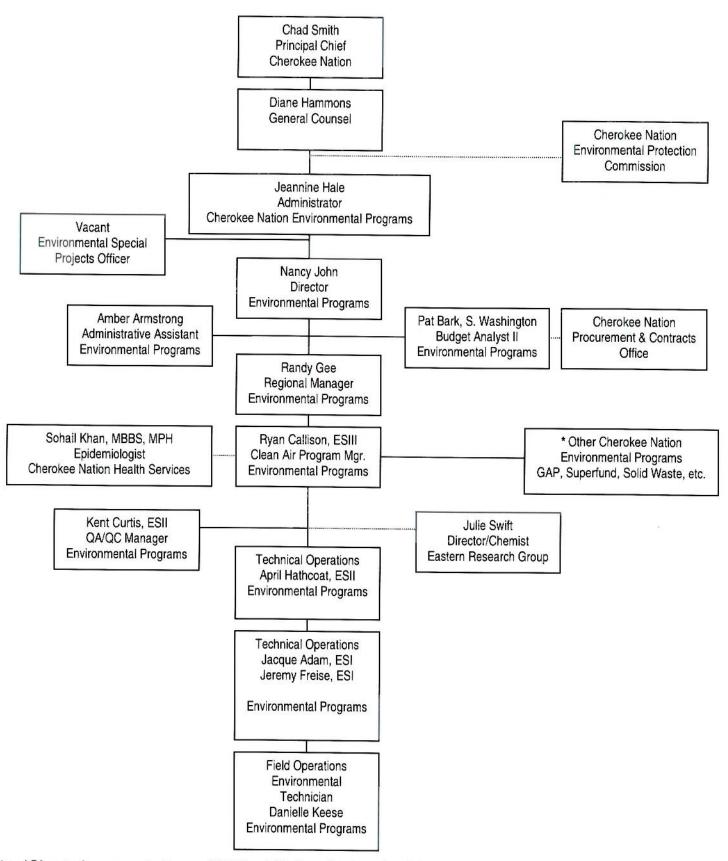
Figure 2 is an organizational chart showing all parties involved in this project. Those personnel named in the preceding paragraphs are directly involved in this project while other parties shown in **Figure 2** play supporting roles in the project.

EXPENDITURES TO DATE

A total of \$57,562 of the \$165,000 awarded for this grant was spent or obligated by the CNEP by the end of the second quarter of this project. Most of the money spent or

Cheronee Nation Environmental Programs Organizational Chart





Note: *Chart shows only those CNEP staff directly involved in the Community Air Toxics Project

107,437.60	165,000.00	57,562.40	47,520.00	4,522.00	5,520.40		
12,395.41	13,195.00	799.59	0.00	0.00	799.59	970000	Indirect cost(IDC): allocation
2,500.00	2,500.00	0.00	0.00	0.00	0.00	760010	Other operational
200.00	200.00	0.00	0.00	0.00	0.00	730040	R & m equipment
100.00	100.00	0.00	0.00	0.00	0.00	710090	Allocated: property insurance
900.00	900.00	0.00	0.00	0.00	0.00	700010	Utilities
3,207.00	3,207.00	0.00	0.00	0.00	0.00	690120	Allocated: mailing cost
500.00	500.00	0.00	0.00	0.00	0.00	690090	Allocated: cell/mobile phone
(4,522.00)	0.00	4,522.00	0.00	4,522.00	0.00	680070	Equipment <\$5K
2,603.83	3,500.00	896.17	0.00	0.00	896.17	680000	Supplies
29,480.00	77,000.00	47,520.00	47,520.00	0.00	0.00	650000	Contract services >=\$5K
300.00	300.00	0.00	0.00	0.00	0.00	640000	Contract services < \$5K
8,461.25	9,011.00	549.75	0.00	0.00	549.75	630000	Travel-staff
1,759.00	1,759.00	0.00	0.00	0.00	0.00	620000	Staff development & training
12,103.34	13,144.00	1,040.66	0.00	0.00	1,040.66	610000	Fringe benefits
37,449.77	39,684.00	2,234.23	0.00	0.00	2,234.23	600000	Salaries & wages
Balance	Budget	Total	Commitment	Encumbrance	Actual	Account	COMMUNITY TOXICS

THESE EXPENSES WILL BE CORRECTED: Travel will be removed and the IDC will be adjusted.

1st Qtr. Expenses 10/01/06 - 12/31/06

obligated was for one-time expenditures: \$47,520 obligated to ERG for the performance of sample analyses and data reporting during the period from September, 2006 through May, 2008; and \$4,522 obligated to RM Environmental, Inc. for a backup RM910A sampler and spare parts (seals, etc.) for the primary RM910A sampler. The remaining expenditures through the end of the second quarter were \$2,234 for salaries, \$1,040 for fringe benefits, \$896 for two Restek sample canisters, and \$800 for indirect costs. Thus expenditures and obligations through the end of the second quarter are within the overall budget for the project. In other words, expenditures for salaries, fringe benefits, indirect costs, and other expenses are not expected to exceed the total awarded for the two-year life of the grant.

COMPLIANCE WITH QUALITY ASSURANCE REQUIREMENTS

The CNEP's original QAPP/Work Plan for this project was approved by the EPA in February, 2006. A revision of this QAPP was completed by the CNEP on September 21, 2006 and was approved by the EPA on October 26, 2006.

In addition, the CNEP is operating under a Quality Management Plan (QMP) approved by the EPA on May 30, 2006. The CNEP air quality monitoring program is also operating under several other EPA-approved QAPPs, including QAPPs for criteria pollutant monitoring (including meteorological instruments) and for PM2.5 and PM10 monitoring.

The contracted laboratory, ERG, is operating under the following EPA-approved QAPP: Support for the EPA National Monitoring Programs (NMOC, UATMP, PAMS, HAPs, and NATTS). EPA approval for ERG's updated QAPP for 2006/2007 is pending.

RESULTS TO DATE

Seventeen samples (plus two duplicates) were collected from September 26 through December 31, 2006 (see first page of **Appendix A** in this quarterly technical report). All but two of these samples produced valid sample data. ERG submitted data for the first seven samples – collected from September 26th through October 26th – to the CNEP in December, 2006 and the CNEP analyzed this data in January, 2007. Summaries of the lab data and the CNEP's analysis of that data are included in **Appendix B** of this quarterly technical report.

The number of VOCs detected in each of the first seven samples ranged from 23 to 30. The concentrations of the detected VOCs were compared to the following benchmarks: EPA Region 6 Human Health Medium-Specific Screening Levels, including chronic inhalation toxicity values (non-cancer and cancer values), and including screening values for ambient air; Oklahoma Department of Environmental Quality (ODEQ) MAACs; and ATSDR Minimal Risk Levels (MRLs) for inhalation. The concentrations of 4 to 7 of the detected VOCs equaled or exceeded one or more of these benchmarks in each sample. The VOCs exceeding these benchmarks were as follows: acrolein; chloromethane; 1,3-butadiene; chloroform; benzene; carbon tetrachloride; and trichloroethylene. A more

detailed analysis of these results is included in Appendix B of this quarterly technical report.

PROBLEMS ENCOUNTERED

No serious problems were encountered during the second quarter of this project. Two minor problems that occurred during the second quarter are described here.

Samples originally scheduled to be collected on October 8th and October 14th were not collected on those dates because of errors in programming the automatic timer on the RM910A sampler. This was presumably the result of operator error. Make-up samples were collected on October 10th and October 18th, respectively (see first page of sample schedule in **Appendix A** of this quarterly technical report). No similar errors have occurred since these first two, presumably because CNEP staff members are now familiar with the standard operating procedure for programming the RM910A sampler.

Two samples – collected on December 1st and December 25th – were invalid (unuseable) because the sample canisters had internal pressures of zero at the end of sample collection. To produce valid sample results, a canister must have an internal pressure that is either negative or positive at the end of the sample collection period. A final canister pressure of zero suggests that a canister lost pressure some time after the conclusion of the sampling event. If such a pressure loss occurred, then the sample may have been contaminated with air from either inside or outside the building housing the sampling apparatus, or sampled air and contaminants may have escaped from the canister.

The sample collected on December 1st had a final canister pressure of +2 when it was shipped to ERG for analysis, but it had a canister pressure of zero when it arrived at ERG. The cause of this pressure change during shipment to ERG is unknown. The sample collected on December 25th had a final canister pressure of zero when CNEP personnel shipped it ERG. The reason the final pressure was zero instead of negative or positive is unknown. A possible cause may include operator error during setup or retrieval of the sample canister, which could result in a loose connection between the sample canister and the tubing leading from the canister to the RM910A sampler. The QA/QC Manager (Kent Curtis) for this project is monitoring the situation in an attempt to identify and correct the cause of the problem.

Of the first 17 samples collected (not including duplicates) from September 26th through December 31st, 15 samples yielded valid (useable) data. Thus the data completion rate for the first three months of sample collection is 88%. This meets the desired data completion rate of 85%, which is specified in Section 2.5 of the Revised QAPP/Work Plan for this project.

ACTIVITIES PLANNED FOR THIRD QUARTER OF THIS PROJECT

1. Continue sample collection in accordance with the Proposed Sampling Schedule for this project (see **Appendix A** of this quarterly technical report).

- 2. The CNEP will send its backup RM910A sampler to ERG for an EPA Compendium Method TO-15 "canister sampling system certification" (aka, NATTS Certification) in February, 2007. Subsequently, the CNEP will perform a flow verification check on the backup sampler.
- 3. ERG will continue reporting sample data to the CNEP at monthly intervals. ERG, under the terms of its contract with CNEP, will post project data to AQS within 90 days of the end of each calendar quarter. Posting of project data to AQS will begin as early as the 9th month (March, 2007) of the project.
- 4. Kent Curtis of CNEP will attend the EPA Region 6 Regional Air Monitoring Conference in Albuquerque on March 6-8, 2007. He will give a brief presentation on the CNEP's Community Air Toxics Project.

PUBLICATIONS ARISING FROM THIS PROJECT

The CNEP will present the results of this project at one or more regional or national conferences as project data become available. Such presentations will not occur until 2007 or 2008. There are no plans at this time to publish the final results of this project.

The CNEP will share data from this project with the Cherokee Nation's Health Services department. The CNEP and the CN Health Services may jointly host a public meeting to present results of this project to residents of Cherokee Heights no later than the final month of the project (May, 2008).

APPENDIX A

PROPOSED SAMPLING SCHEDULE FOR THIS PROJECT

Sample Date Duplicate Notes	Day Year Day of Sample Week	26 2006 Tue	2006	2006	1 2006 Tue		Fri	26 2006 Thur Graseby canister; shelter temp 130 on 10/24		7 2006 Tue	7 2006 Tue Yes	Mon	19 2006 Sun		1 2006 Fri Graseby canister, +2 final canister pressure at Pryor, 0 at ERG; INVALID SAMPLE	7 2006 Thur		19 2006 Tue	25 2006 Mon O final canister press.: INVALID SAMPLE	Sun	Sat	12 2007 Fri	12 2007 Fri Yes	
	Month	September	October	October	October	October	October	October	November	November	November	November	November	November	December	December	December	December	December	December	January	January	January	-
Lab	Sample Number	2280	2275	2272	2276	2284	3357	3359	2275	2272	2280	2276	2284	3357	3359	2275	2272	2280	3627	3628	2275			
CNEP	Canister	2280	2275	2272	2276	2284	3357	3359	2275	2272	2280	2276	2284	3357	3359	2275	2272	2280	3627	3628	2275			
CNEP	Sample	1	2A	2B	3	4	5	9	7	8A	8B	6	10	=	12	13	14	15	16	17	18	19A	19B	- 00

Notes																									
Duplicate	Sample															Yes			Yes						
	Day of Week	Tue	Mon	Sun	Sat	Fri	Thur	Wed	Tue	Mon	Sun	Sat	Fri	Thur	Wed	Wed	Tue	Mon	Mon	Sun	Sat	Fri	Thur	Wed	Tue
e Date	Year	2007	2007	2002	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007
Sample Date	Day	30	5	11	17	23	1	7	13	19	25	31	9	12	18	18	24	30	30	9	12	18	24	30	5
	Month	January	February	February	February	February	March	March	March	March	March	March	April	May	May	May	May	May	June						
Lab	Sample Number																								
CNEP	Canister																								
CNEP	Sample Number	22	23	24	25	26	27	28	29	30	31	32	33	34	35A	35B	36	37A	37B	38	39	40	41	42	43

Canister Canister	Lab Sample	Month	Samp	Sample Date	Dec. 26	Duplicate Sample	Notes
mber	Number	Month	Day	rear	Day or Week	·	
		June	П	2007	Mon		
		June	17	2007	Sun		
		June	23	2007	Sat		
		June	23	2007	Sat	Yes	
		June	29	2007	Æ		
		July	5	2007	Thur		
		July	11	2007	Wed		
		July	17	2007	Tue		
		July	23	2007	Mon		
		July	29	2007	Sun		
		August	4	2007	Sat		
		August	4	2007	Sat	Yes	
		August	10	2007	Fri		
		August	91	2007	Thur		
		August	22	2007	Wed		
		August	28	2007	Tue		
		September	3	2007	Mon		Labor Day
8		September	6	2007	Sun		
		September	15	2007	Sat		
		September	21	2007	压		
		September	27	2007	Thur		
		October	3	2007	Wed		
		October	3	2007	Wed	Yes	
		Out-Lan		2000	E		

Notes															NY Day										
Duplicate	Sample																	Yes							2
	Day of Week	Mon	Sun	Sat	Fri	Thur	Wed	Tue	Mon	Sun	Sat	Fri	Thur	Wed	Tue	Mon	Sun	Sun	Sat	Fri	Thur	Wed	Tue	Mon	Sun
Sample Date	Year	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2007	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
Sampl	Day	15	21	27	2	8	14	20	26	2	8	14	20	26	1	7	13	13	61	25	31	9	12	18	24
	Month	October	October	October	November	November	November	November	November	December	December	December	December	December	January	February	February	February	February						
Lab	Sample										0.53114					3								i∛ (:)	
CNEP	Canister																								
CNEP	Sample	99	99	<i>L</i> 9	89	69	70	71	72	73	74	75	92	77	78	62	80A	80B	81	82	83	84	85	98	87

Notes																
Duplicate	Sample				Yes											
	Day of Week	Sat	Fri	Thur	Thur	Wed	Tue									
Date	Year	2008	2008	2008	2008	2008	2008									
Sample Date	Day	_	7	13	13	16	25									
	Month	March	March	March	March	March	March									
Lab	Sample Number															
CNEP	Canister															
CNEP	Sample Number	88	68	90A	90B	91	92					270				

APPENDIX B

SUMMARY OF ERG LAB DATA FOR SAMPLES COLLECTED FROM SEPTEMBER 26 THROUGH OCTOBER 26, 2006

And

CNEP ANALYSIS OF THAT SAMPLE DATA